

1. A chimeric isoprenoid synthase polypeptide, comprising a first isoprenoid synthase polypeptide joined to a second, different isoprenoid synthase polypeptide.

2. The chimeric isoprenoid synthase polypeptide of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an isoprenoid reaction product that is not produced in the absence of said second, different isoprenoid synthase polypeptide.

3. The chimeric isoprenoid synthase polypeptide of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an isoprenoid reaction product that is produced in the absence of said second, different isoprenoid synthase polypeptide.

4. The chimeric isoprenoid synthase polypeptide of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes at least two different isoprenoid reaction products.

5. The chimeric isoprenoid synthase polypeptide of claim 1, wherein said first isoprenoid synthase is from a plant isoprenoid synthase and said second, different isoprenoid synthase is from a plant isoprenoid synthase.

6. The chimeric isoprenoid synthase polypeptide of claim 5, wherein said chimeric isoprenoid synthase polypeptide is chosen from the group consisting of (a) the tobacco-*Hyoscyamus* CH4 chimeric isoprenoid synthase; (b) the tobacco-*Hyoscyamus* CH10 chimeric isoprenoid synthase; (c) the tobacco-*Hyoscyamus* CH11 chimeric isoprenoid synthase; (d) the tobacco-*Hyoscyamus* CH12 chimeric isoprenoid synthase; (e)

the tobacco-*Hyoscyamus* CH13 chimeric isoprenoid synthase; and (f) the tobacco-*Hyoscyamus* CH14 chimeric isoprenoid synthase.

7. The chimeric isoprenoid synthase polypeptide of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an antifungal agent.

8. The chimeric isoprenoid synthase polypeptide of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an antibacterial agent.

9. The chimeric isoprenoid synthase polypeptide of claim 1, wherein said chimeric isoprenoid synthase polypeptide catalyzes the production of an antitumor agent.

10. DNA encoding a chimeric isoprenoid synthase polypeptide of claim 1.

11. A vector comprising the DNA of claim 10.

12. A cell comprising the DNA of claim 10.

13. The cell of claim 12, wherein said cell is *E. coli*.

14. The cell of claim 12, wherein said cell is a plant cell.